

REMARKS/ARGUMENTS

Claims 1-20 remain in the application for further prosecution. Claims 10-17 have been withdrawn. Claims 18 and 19 have been amended.

Allowable Subject Matter

Claim 19 has been “objected to as being dependent upon a rejected claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.” Claim 19 has been rewritten in independent form to include all the limitations of base claim 18. Accordingly, claim 19 is allowable at least for the reasons stated by the Examiner.

Rejection of claims 1-3 and 5-9 under 35 U.S.C. § 103

Claims 1-3 and 5-9 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,858,839 to Anderson *et al.* (“Anderson”).

The Examiner acknowledges that Anderson “does not specifically disclose the optical component supports being integral with the base.” However, the Examiner alleges that it “would have been obvious to modify the invention to include the optical component supports being integral with the base, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art (*Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).” The Examiner further alleges that Anderson discloses “a plurality of optical component supports (100, 110, 120, and 130) cast with said base (51)” and that it would have been obvious to include optical component supports being integral with the base for the “purpose of eliminating additional pieces and as a result eliminating the possibility of misplacing these additional pieces.”

Claim 1, which is the only independent claim of the rejected claims 1-3 and 5-9, is directed to “a plurality of optical component supports cast with and integral with said base.” Contrary to the Examiner’s allegations, claim 1 is patentable over Anderson at least because a) Anderson does not disclose optical component supports cast with the base; b) the proposed modification would render the Anderson bench unsatisfactory for its intended purpose; c) the proposed modification would change the principle of operation of the Anderson bench; d) the

proposed modification is contrary to accepted wisdom in the art; and e) the current invention provides numerous advantages over Anderson.

A. Anderson fails to disclose at least one claim element, i.e., “optical component supports cast” with the base. The supports (e.g., supports 52, 54, 56, 58, 60, 62) are not cast with the base 50. Thus, Anderson fails to disclose at least one claim limitation of claim 1.

B. The modification suggested by the Examiner would render the bench disclosed by Anderson unsatisfactory for its intended purpose. “Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.” Manual of Patent Examining and Procedure (“MPEP”), Eighth Edition, Revision No. 4, § 2143.01 (I), page 2100-135 (right column). Accordingly, “[i]f proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” MPEP, § 2143.01 (V), page 2100-137 (citing *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984)).

Anderson teaches an optical bench related to mass spectrometry that is intended to solve a “need in mass spectrometry for the alignment of individual components of the ion optics system to achieve high levels of resolution of spectral peaks.” Anderson, col. 3, ll. 37-39 (emphasis added). The ability to align the individual components of the Anderson optical system is emphasized many times throughout the disclosure:

- “In the construction of TOF-MS spectrometers, whether linear, orthogonal accelerated or the like, the alignment of the individual components is important to achieve high levels of resolution of the spectra peaks. In all TOF-MS it is important to keep the source and the detector ion elements parallel to each other within fractions of a degree to achieve acceptable resolution. Additionally, for orthogonal accelerated TOFMS it is also important to maintain perpendicularity between the ion source and the pulsing optics.” Anderson, col. 2, ll. 59-67 (emphasis added);
- “In one embodiment of the present invention, the optical bench of the present invention has a flat surface and accurately machined details that interface with the supports to which the components of an ion optics system are, or may be, attached. In this fashion the components of the ion optics system self-align accurately to within acceptable tolerances upon assembly and installation.” Anderson, col. 5, ll. 32-38 (emphasis added); and

- “The support mating faces and mounting base mating faces are configured and dimensioned such that when the support mating faces are brought together in registration with their respective mounting base mating faces, the components of the ion optics system are optically aligned within acceptable tolerances.”
Anderson, col. 7, ll. 8-14 (emphasis added).

The ability to align the individual components of Anderson would be obstructed by integrating the supports with the optical bench. Having integral supports with the optical bench, as claimed in the current invention, removes the ability to align the supports relative to the optical bench as taught by Anderson. In fact, while Anderson teaches that the optical components can be integral with the supports, nowhere does Anderson teach or suggest the integration of the supports with the optical bench. *See* Anderson, col. 5, ll. 26-28 (described that “the support for attachment to the optical bench may be integral with the component of the ion optics system”). Thus, the integration of the supports to the optical bench would render the system taught by Anderson unsatisfactory for its purpose, *i.e.*, to provide an optics system that can achieve high levels of alignment.

Additionally, the *Howard* decision cited by the Examiner is inapplicable to the current invention. Specifically, the decision refers to the same item being cast in one or two pieces:

However this may be, it is conclusively shown that the Monumental grate, which was in public use five years before application was made for the patent under consideration, contains all of the elements of the Beckwith grate, except that, being adapted for burning coal, it is cast in two pieces, while the Beckwith grate is cast in one piece.

Howard, 150 U.S. at 169-170 (emphasis added). The decision refers to the Monumental grate, which was cast in two pieces, and the Beckwith grate, which was cast in one piece. In our case, the Examiner is not comparing the Anderson bench to the current invention bench but the Anderson bench and the separate supports to the current invention bench and the optical component supports.

The bench and the supports provide independent functions. For example, the bench is generally used as the main support structure and the supports are generally used at least for supporting and aligning specific optical components. Eliminating the alignment function of the supports is contrary to expectation of the art. For example, in *Schenck v. Nortron Corp.* the

claims were directed to a vibratory testing machine that includes a holding structure, a base structure, and a supporting means which formed “a single integral and gaplessly continuous piece.” MPEP, § 2144.04 (V)(B), page 2100-146 (citing to *Schenck*, 713 F.2d 782 (Fed. Cir. 1983)). Although *Nortron* argued that the invention is just making integral what had been made in four bolted pieces, the court found the “argument unpersuasive and held that the claims were patentable because the prior art perceived a need for mechanisms to dampen resonance, whereas the inventor eliminated the need for dampening via the one-piece gapless support structure, showing insight that was contrary to the understandings and expectations of the art.” *Id.* Similarly, in our case the current invention has eliminated the need for aligning the optical component supports that are integral with the cast bench.

C. The modification suggested by the Examiner would change the principle of operation of the Anderson bench. “If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.” MPEP, § 2143.01 (VI), page 2100-138.

As described above, Anderson teaches a bench that requires alignment of its optical components. Integrating the supports of the optical components to the bench would change the principle of operation of the system taught by Anderson because it would remove the ability to change the position of the supports for alignment purposes.

D. The modification suggested by the Examiner is contrary to accepted wisdom in the art. Proceeding “contrary to accepted wisdom in the art is evidence of nonobviousness.” MPEP, § 2145 (X)(D)(3), page 2100-169 (also stating that “known disadvantages in old devices which would naturally discourage search for new inventions may be taken into account in determining obviousness”).

The current invention proceeds contrary to accepted wisdom in the art. As described in the “Description of the Prior Art” section of the current invention

Benches for lasers traditionally comprise a bench base to which a number of separate component-holding supports are attached. For example, a common design for such a bench includes a bench base with a number of threaded holes set therein in a regular pattern.

¶ 0002. The bench taught by Anderson is exactly this type of traditional bench, which requires threaded holes for attaching the supports to the bench. For example, Anderson teaches that “[a]ttachment is generally accomplished by means of fasteners such as screws.” Anderson, col. 8, ll. 45-46. This is the accepted method for allowing the flexibility to align optical components. Integrating the supports to the bench is contrary to fastening the supports to the bench. Because, inherently, the alignment of the supports of the Anderson bench requires that the supports be separate from the bench, one of ordinary skill in the art would be discouraged from pursuing supports integrated with the bench.

E. The current invention provides numerous advantages over Anderson. Contrary to the Examiner’s allegation that the current invention is directed merely to “eliminating the possibility of misplacing these additional pieces,” it is clear that the bench of the current invention solves numerous known disadvantages that plague the Anderson bench:

- “the threaded connections between the component supports and the base may become loose over time, decreasing the accuracy of component placement”
- “a regular hole pattern may not coincide with the ideal mounting location of a component”
- “if components are moved for experimentation or replacement, it is important to remember where on the base the component support was located if future setups are to replicate the original setup of the system”
- “the number of mounting components such as posts and fasteners in known optical bench systems increases the complexity and difficulty of using optical benches”

Description of the Prior Art, ¶ 0003. Clearly, the current invention is directed to solving numerous problems existent in previous optical benches.

Accordingly, the Applicants respectfully submit that claim 1, along with all the claims dependent thereon, is patentable over Anderson at least for the above-stated applicable reasons.

Rejection of claims 4, 18, and 20 under 35 U.S.C. § 103

Claims 4, 18, and 20 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Anderson as applied to claim 1 above, and further in view of U.S. Patent No. 6,771,437 B1 to Willis (“Willis”).

Claim 4 is dependent on claim 1 and is therefore patentable over Anderson in view of Willis at least for the applicable reasons stated above in reference to claim 1.

Claim 18, which is the only independent claim rejected over Anderson in view of Willis, is directed to a plurality of optical component supports cast with and integral with said cast base.” Claim 18, along with dependent claim 19, is patentable over Anderson in view of Willis at least for the applicable reasons stated above in reference to claim 1.

Additionally, claim 18 is patentable over Anderson in view of Willis at least because the references do not disclose at least two claim elements. Although the Examiner alleges that Anderson discloses “a plurality of support struts (104, 114, 116, 124, and 130a) being spaced to form at least a first support region,” Anderson does not disclose the claimed support struts.

Claim 18 is directed to “a plurality of support struts integral with said base and spaced beneath said top surface of said cast base to form a first region and a second region of said cast base, the support struts providing rigidity to said cast base.” Claim 18 has been amended only to clarify that the support struts provide rigidity to the cast base.

The reference numerals used by the Examiner do not identify support struts. For example, reference numeral “104” is used to identify a “portion 104 that is tab-like” and that includes a face “104a.” Nowhere does Anderson refer to portion 104 as a support strut. For example, Anderson explains that the face 104a is “machined to be flat” and is used to maintain “the various parallel and perpendicular relationships between the various parts of support 100.” Thus, the portion 104 is used for alignment purposes (not support purposes).

Additionally, even if the reference numerals cited by the Examiner identified support struts (which they do not), they are not spaced beneath the top surface of the cast base. In fact, the Examiner has never addressed this claim element.

Accordingly, the Applicants respectfully submit that claim 18, along with dependent claim 19, is patentable over Anderson in view of Willis at least for the above-stated applicable reasons.

Conclusion

It is the Applicants’ belief that all of the claims are now in condition for allowance and action towards that effect is respectfully requested. If there are any matters which may be resolved or clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney at the number indicated.

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A check of \$200 has been enclosed for the fee associated with the additional independent claim 19. Should any additional fees be required (except for payment of the issue fee), the Commissioner is authorized to deduct the fees from Jenkens & Gilchrist, P.C. Deposit Account No. 10-0447, Order No. 47080-00047USPT.

Respectfully submitted,



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